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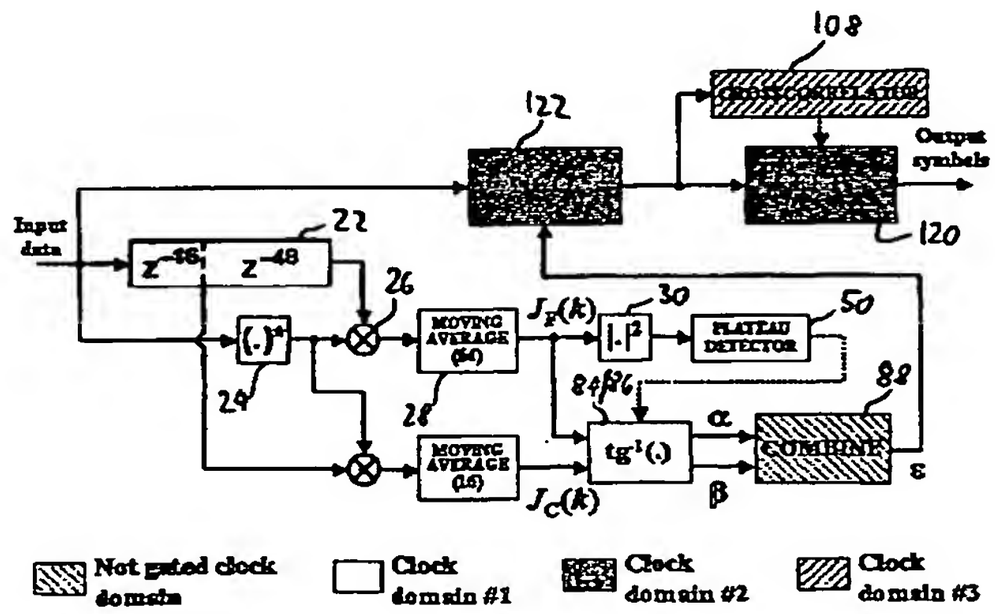
(54) Title: METHOD AND DEVICE FOR FRAME DETECTION AND SYNCHRONIZER



(57) Abstract: The IEEE 802.11 a standard makes use of the Orthogonal Frequency Division Multiplex (OFDM) transmission scheme. The main feature of the OFDM is that the information stream is not transmitted into a single carrier, but is divided into several sub-carriers, each transmitting at a much lower rate. Furthermore, all these sub-carriers are orthogonal, i.e. they overlap their spectra but without causing mutual interference. In summary, there are the following inventions comprised in present application: the algorithm used for the frame detection, making use of a simplified differentiator to obtain an absolute maximum in the differentiated signal at that point where the first plateau in $J_F(k)$ starts (output of the autocorrelator with N_d=64); the design of the peak detector to obtain the position of the absolute maximum in the differentiated signal, dividing the problem into relative peak detection and falling edge detection; the use of a simplified XNOR-based crosscorrelator, and the simplifications therein based on the knowledge of the reference; the use of our particular solution for the CORDIC algorithm in the vectoring mode for arctangent calculation; the hardware structuring of the whole synchronizer, allowing a very simple control mechanism and the separation of this structure into different clock domains, each one being activated only to perform its operation and deactivated afterwards.

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